A Psychological Inquiry into the Role of Music in Video Games

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Resident Evil Poster
Courtesy: http://residentevil.wikia.com/wiki/Resident_Evil_5

Abstract

Music has been proven to be an integral part of the video games and is correlated to games for almost as long as they have been in existence. This paper blends the analysis of the genre of music in the games and explores the significance of music in video games. The objective of the paper is to focus on the music through the aspect of video games and to promote the positive reception on it. This study through the ethnographic framework focuses on the connection of the video games and the music and how music is related to the process of immersion. It also shows that how music in video games may affect the performances of the player. The paper highlights the possibility that either faster or slower music could increase the performance of the player.

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Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   297

The paper helps to get a better understanding that how the music plays a vital role in visual presentations of video games. There will be a quantitative analysis based on the music used in the video games to investigate that whether the background music increases participants immersion or not. This research will be done through the ethnographic survey focussing on the age group between 15 and 25.

Keywords: video games; game experience; immersion; music, music role in video games

Introduction

In modern times, video games have become the intrinsic, incredible and insidious   part of entrainment and now-a-days, number of children, teenagers and even adults also prefer to play video game rather than going out for movies. From the last few years the craze for the video games has increased. Video game is a kind of electronic game that involves interaction, immersion, involvement of the player. In video game player becomes the controller and control all the moving pictures by just pressing the buttons. Now, Jesse Schell   describes "video games as a problem-solving activity, approached with a playful attitude" (Schell, 2010, p.37). Grant Tavinor studies the definitions of video games and introduces his own definition as "X is a video game if it is an artefact in a visual digital medium, is intended object of entrainment through the employment of one or both of the following modes of engagement: rule and objective game play or interactive fiction" (Tavinor, 2009,p.15-34). In addition, video games have also brought the positive effect on the society because it reduces   the stress of the player by taking them to the virtual world and provides distraction from the everyday life work and tensions. It allows people to "loose" themselves in the world of games.

Video games can also be defined as an amalgam of audio and visual performance i.e. the visuals and the sound come together to create one cohesive, interaction experience. Whenever we talk about media, such as film, television or about video games there is always a need of strong element in all of them i.e. a strong audio-visual relationship to maintain the synchronicity and continuity of the on-screen action and audience involvement.

There are different kinds of video games which differ from each other in their design and structure but still there is one element which is common in all types of games, i.e. Background music. According to research of McElrea and Standing (1992), "Individuals listening to fast music while drinking water drinks faster than if they listened to the slower music or no music at all." (p.362) Similar is the case with the players that they get so absorbed in the music of the game that their body start responding with the pace of the music of the video games. Another experiment to know about the importance of music in video games was performed by the Nacke, Grimshaw and Lindley (2010), "they performed an experiment in which they asked the players to play a fast-paced video game i.e. *"First Person Shooter"* in which both sound and music on and off were operated. The outcome shows that those players experienced positive feelings and were enjoying the games when the sound of the games was on but when the sound of the games was turned off the result was totally opposite" (336-343).

Practically all games have music and the ability to draw people in with the help of music and this experience of getting absorbed in the games is referred as "immersion". "Player immersion is also said to be the holy grail of video game." (Zhang and Fu, 2015, p.1).

Immersion

"Immersion is a term commonly used for gamers and reviewers." (Jennett, Cox and Cairns,2008, p.4). According to Varney (2006) "Understanding immersion is very important for game

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Language in India www.languageinindia.com**ISSN 1930-2940 18:5 May 2018**
Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   298

developers" (1-2). "During this extremely intensive state, one is wholly absorbed within the activity of playing video game and gains great contentment" (Ermi and Mayra, 2007, p.2). Therefore, there is more to a video game than just high scores i.e. it is also about being getting immersed and transported to the other world i.e. the virtual world. Now, "Immersion is the sense of being in a game where a person's thoughts, attention and goals are all focused in and around the game" (Zhang and Fu, 2015, p.2). As Janet Murray in (1997) define immersion in her book, "*Hamlet on the Holodeck*":

> A stirring narrative in any medium can be experienced as a virtual reality because our brains are programmed to tune into stories with an intensity that can obliterate the world around us. And that experience and the feeling of being transported to a virtual world is pleasurable in itself, despite of the fantasy content and this experience is known as immersion. Immersion is actually a metaphorical term. Immersion is just like the physical experience of being submerged in water. We get the same feeling from a psychologically immersive experience that we get from a plunge in the ocean or swimming pool i.e. the sensation of being surrounded by a completely other reality, as different as water is from air, that takes over all of our attention, our whole perceptual apparatus . . . in a participatory medium, immersion implies learning to swim…and the enjoyment of immersion is a participatory activity. (pg. 98-99).

When we talk of Immersion in video games, then we are talking about how individuals' thinking, attention and all thoughts are aimed around the game and it is closely related to our psyche. Immersion in video games is considered as the after-effect or result of a good experience with the game. "Now, there seems to be a broad understanding of immersion, but it is still not clear what exactly is meant by immersion and what is cause of immersion" (Jennett, Cox and Cairns,2008, p.641-661).

Immersion is like the interaction with the sound. Immersion means becoming part of the experience of virtual world i.e. a part of the experience itself. Immersion is the indicator of the interaction between a game and a player.

Emily Brown and Paul in one of their papers, which is actually an interview-based paper, namely "A grounded investigation of immersion in games" (2004) talked about immersion and its structure. Brown and Paul Cairns divided cause or process of immersion in three parts:

(1) "Engagement, the lowest initial level of immersion", which consists of the access, and the time the player invests in the game.

(2) "Engrossment or the emotional attachment of the player to the game determined by the construction of the game."

(3) "Total Immersion or presence, where the players are cut off from reality as a result of their empathy level and the atmosphere of the overall design."

Immersion can also be defined as something that takes individual away from reality. According to Haywood and Cairms "immersion has the following feature i.e. Loss of awareness of the real-world involvement, lack of awareness of time and a sense of being in the task environment" (Zhang and Fu,2015,p.2).Now, "There are few researchers who believed that immersion consist of two parts: Perceptual immersion and Psychological immersion. Perceptual immersion can be defined as a sense of having one's perceptual system submerged in a virtual environment, while psychological immersion

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Language in India www.languageinindia.com**ISSN 1930-2940** **18:5 May 2018**
Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   299

refs to the degree to which the user feels involved in or engaged with stimuli from the virtual environment" (Zhang and Fu, 2015, p.2).

Therefore, immersion is something which is related to the scope of what is happening and the narratives within the alternative realities affect the way we interact with them, it affects the time we spend on them and most importantly it determines the satisfaction and pleasure we get from games. "Immersion has been related to the notion of flow and presence and both of them used things like temporal dissociation and awareness of surroundings as indicators of high involvement. However, immersion always and focused on the specific, psychological experience of engaging with a video game" (Jennett, Cox and Cairns, 2008, p.641-661).

"Immersion act as significant part of video games, as video games merge two elements that exist within books and motion pictures: The narrative and the visual stimuli. The background music plays a major role in the immersive quality of a video game." (Collin,2008) The background music of the video games blurs the line between real and virtual world and thus produces a sense of presence in video game.

Role of Music

If we talk about the gothic then in gothic games, it is the music which produces the feeling of fear and terror and it is the music which makes and also controls the pace of the player. Video game music composer Tommy Tallarico performed an experiment and explains the importance of background music in the video games by taking example of the game Space invaders that:

> In the game *space invaders, as* the ships started to come down, the aliens and as they got closer and closer, the sound got faster and faster. Now what the games programmers did was that they took the persons heart rate and as they are getting closer and closer, people would start to panic. Now, they do the same studies but this time without music or sound and the people wouldn't panic as much and it goes to show and prove that how significant an audio and music are (The evolution of video games, 2008, p.1).

Music in video games is not a passive element of the background rather it has the potential to make the participant active player. SCI model will justify the function of background music in video games and how it is related to the players' immersion.

We will elucidate the role of music in players' immersion in the video games with the help of SCI. As per Ermi and Mayra, "SCI is an amalgam of sensory immersion, challenge-based immersion and imaginative immersion, it is a comprehensive model regarding game play experience. According to them the games play experience and immersion into a game area is multidimensional phenomena. Immersion is actually a many-faceted phenomenon with totally different aspects which will appear and be emphasized differently within the individual cases of various games and players" (Zhangand Fu, 2015, p.2). According to this model, "sensory immersion, challenge-based immersion and imaginative immersion are the three basic factors which will exert influences to players' overall experience" (Zhang and Fu, 2015, p. 2). "Even the most effective and the best video game is the combination of these three dimensions. Among them, sensory immersion relates to the audio-visual execution of games. They claim that this is something that even those with less experience with games can recognize: digital games have evolved into three-dimensional, audio-visually impressive and stereophonic worlds that surround their players in a very comprehensive manner" (Zhang and Fu, 2015, p.2).

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Language in India www.languageinindia.comISSN 1930-2940 18:5 May 2018
Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   300

Even though significance of background music has come under the focal point of game contrivers and players, yet they lack that understanding of its importance. Therefore, it is very much important to know all the effects of music and to understand that how music acts as an energetic and effectual means of expression in video games.

Focus of This Paper

This paper is based on the research that how background music of the video games make player immersed in the video games that instead of giving passive reactions they become an active participant of the games and to investigate that whether music plays a major role in video games or not, we will perform an experiment by taking some games.

In this paper, we are focusing on two games one is the First-person shooter video game i.e. Crysis. This game is also known as the stunning standout game. The game began with the news of outbreak of the Manhattan virus and due to the breakdown in the New York city, Manhattan is place under the US department of defence, soldiers from Crynet enforcement and logical logistics and they came to know that it is the alien race who are trying to kill human and Alcatraz is the main player who has to rescue the human from the alien race.

Now defining first person shooter game it is a game played from the perspective of first person. Though this is a fictional game but still it is the favourite game of many players and the reason why players enjoy playing this game is because in this game there is the use of weapon(gun)and moreover the thrilling music which entice the players to do something which they are not allowed to do in real world. Game music gives them power to be strong, to be fast.

In the very beginning of the game, one can hear the music of war when there happened an announcement to get ready with their arms within ten minutes, that was the first step of immersion i.e. the "engrossment level according to Bros". In the entire game music fills you with the passion and the proud that you are going to fight for humanity. Background music of the game keeps on refluxing from the moment army abandoned the ship, went into the water and the moment when aliens attacked the army .One can hear the Music of piano when Alcatraz, the protagonist decide to fight for his country .A sudden change in the tempo of music can also be felt with the start of war and also at the moment when the player lost his energy i.e. when the number of bullets became less, there is sudden shift in the music can be felt. So, in this way we can say that music in the FPS somehow is responsible for sensory immersion

Resident Evil 5 – Survival Game

Now, consider another game, i.e. Resident Evil5 which is a survival game. This game is designed for two players. In this game Chris and Alomar are the two main players and Chris came to Africa to fight with the Bioterrorism in Africa. As soon as the game begins, one can notice a different kind of music. In this game the music is somewhat different; it changes with what is happening on the screen. As well as when the player was in an area where there is no enemy, here one can hear certain tracks of music. Similarly, when the player is being attacked, more upbeat kind of track can be heard. Here music also plays the role of the signal, as the music doesn't stop until player kill every enemy in the area. So, even in this game it is the music which plays a significant role in the game and it is the music which immerses a person in the game.

"There are various ways to measure the immersion in players during game play. One of the main challenges facing the game research is a lack of a coherent and sounded set of method and tools

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Language in India www.languageinindia.com**ISSN 1930-2940 18:5 May 2018**
Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   301

that enable the measurement of subjective experiences in a sensitive, valid and reliable manner" (Ijsselstein, Kortand Poels, 2008). "There are different ways to measure immersion level in players' some of them are immersion questionnaire, psychological instrument, and to observe behaviour of player during game play and functional Magnetic Resonance Imaging (fMRI)" (Zhang and Fu, 2015, p.2).

Assessing Immersion

Now, "immersion can be calculated both subjectively i.e. from questionnaires as well as objectively i.e. from psychological method and behaviour during game play (influences itself). In this paper, we are going to measure immersion with the help of questionnaire and lab experiment"(Zhang and Fu,2015,p.2).

In the experiment of immersion, we took the help of "Immersion questionnaire used in the work done by Jennet et al." (Jennett, Cox and Cairns,2008, p.641-661) "which was a revision of Brown and Cairns" (Brown and Cairns,2004, p.1297-1300). It consists of questions which were related to the "emotional involvement and the mental involvement of the player. The "questionnaire consisted of four sections: those sections consist of questions which were related to basic attention, temporal dissociation, transportation, challenge, emotional involvement and pleasure" (Zhang and Fu, 2015, p.2). The questionnaire consists of four questions the first section consists of total 6 questions, the second section consists of 22 questions, the third section consists of 7 questions and the fourth and the last segment consist of 17 questions. Participants have to fill the questionnaire" (Zhang and Fu,2015, p.2) and after playing the game, they were asked to choose one of the options given below which they think is the right answer.

After that to check the immersion of the players, the players have to do another task i.e. Find the number task. This is irrelevant task given to the players to check the immersion.

"For example, Jennet asked participants which were randomly selected for an experiment regarding video game to finish a Tangram task just after finishing the video game task and the result showed that performance of the participants was very bad in subsequent Tangram task than in the videogame task because they were highly immersed in the video game task and therefore they were unable to switch from one task to another. The results also confirmed that the degree of immersion in task is negatively related to the performance within the Tangram task" (Zhang and Fu, 2015, p.2).

In the same way, we performed "Find the number task". That was another kind of game in which the player has to accomplish the target and the goal of the player is to find in the panel below the number that was generated above. Beside this the number should match the colour font and moreover those colour box given below were irrelevant. So, player has to keep his/ her mind and eyes open to win this game.

As mentioned above in the abstract, we are going to do empirical studies to scout out the role of music of video games on players' immersion. All the participants who participated in this experiment were judged on the basis of their performances to know whether background music plays an essential role in video games or not. Now, those video games that we had selected for this study were 1. Resident Evil 5 and another game was the First-person shooter with thrilling background music. In order to get the appropriate result in the end, all the participants were divided in two groups i.e. Group A and group B. The players were randomly selected , the players of group " A" played First Person Shooter game and the players of team "B "played the Resident Evil 5.Now , two different rooms were selected one for team A and one for Team B , in this experiment players of both the

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Language in India www.languageinindia.com**ISSN 1930-2940** **18:5 May 2018**
Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   302

teams were allotted in pairs to play the similar type of game, one player play the game with earplugs on to enjoy the background music of video game while the another player play the same game but without music . The players in the pairs sat in the same room and therefore every group of participants faced the same experimental process except that the background music was turned off or on.

If we talk about how video games is related to psychological states of a player then "massive amount of evidences from researches have demonstrated that the gaming experience was also an important factor that cannot be neglected in the influence of numerous psychological states and behaviours" (Zhang and Fu, 2015, p.2).

Moreover, it is also said that video games have a positive effect on psychology of player, it is related to the performance superiority and moreover it also improves your visual and spatial tasks.

Hypotheses

The following are then premium hypotheses we use in our paper:

- Background music plays an essential role in video games and it also plays a crucial role in immersion.
- The players who played the video games with background music on will get more immersed rather than the players who play the game without background music.

Methods

Participants for this experiment have been selected from one college, where we found the students of different age group which help us to get wider perspective related to our experiment. Students from the college were selected to fill the questionnaire and both boys and girls were allowed to fill the questionnaire. With the help of the interaction with the players, we came to know that there were two kinds of participants. There were highest-ranking gamers i.e.60 participants who play video games for 30 to 33 hours a week. There were Males 42 and Females 18. 60 participants played video games just for 7 to 8 hours a week. Both types of gamers, i.e. high gamers and low gamers were chosen for the experiment

The two video games selected for this experiment were "Resident Evil 7" and the "First Shooter Game". "Resident Evil 7" is a gothic game and it has always been considered as one of the best video games. In this game, the protagonist went to find his wife who has been missing for three years and he went to an old house in search of her where he met his wife, but, after some time, he realized that his wife had turned into a zombie and after knowing that he wanted to get out of that house, but he was unable to come out. So, this game is all about the hard work of protagonist to come out of the house as soon as possible The second game is the first-person shooter, i.e. Crysis.In this game, the protagonist saves the humans from the attack of aliens.

We took the help of questionnaires used by Jennett et al. (Jennett, Cox and Cairns,2008, p.641-661) in her work which was a revision of Brown and Cairns (2004, p.1297-1300). "The questionnaire was a measuring mixture of person factors (cognitive involvement, real world dissociation, emotional involvement) and game factors (challenge, control) (Zhang and Fu, 2015, p.2).

All the computers of both the room were connected to a system i.e. main system of the networking lab and all the participants were divided in pairs i.e. one with music and one without music.

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Language in India www.languageinindia.com**ISSN 1930-2940 18:5 May 2018**
Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   303

After providing them, with the information players were allowed to take their respective positions. The two players of the pair were informed to sit on separate computer systems and the computer of every room was connected with the computer of the research lab, so that they could start playing the game at the same time and all players faced same game hurdles at same time. Earlier than the start of the game play, they had given the proper time to be familiar with the game. The players were very excited for the experiment and few of them said that they had prepared a lot. After all the instructions game play begins and continued for 30 minutes. Throughout game period, one player plays the video game with the background music on, contrary to this, the other player did not hear any music. There were two teams i.e. A and B team and each team consists of 30 players. Both teams were playing their games in different rooms. As mentioned above the players of team A were playing gothic game and the players of team B were playing first person shooter game and, in both teams, 30 players were playing game with background music and 30 players were playing game without game. After 30 minutes, the video game was stopped. "When the phase 1st was completed the players were asked to play and finish second game i.e., Find the number game. Participants were informed to distinguish the number of same colour as quickly as possible while maintaining a high level of accuracy. After the task, the immersion questionnaire was prepared for every participant to fill in (Jennett, Cox and Cairns,2008, p.641-661). After completing all the measures, we thanked the participants for their participation and after that they left.

Results

Results of Questionnaire: There were 52 questions in the questionnaire and most of the answers were marked positively. Through the result of questionnaire, we found that most of the participants think that music plays an important role in video games and it performs an essential function in engaging player in video game .

Feedback of the Players of Team "A"

Players of team A who were playing " Resident evil game" with background music on   felt that game was very scary especially when the zombie appeared and they were totally immersed in the game and they were fighting hard with the zombie for their survival   whereas the players who played the same game with background music off felt that game was not that much scary though, it was interesting to fight with ghost but still they don't get scared of them . This feedback of the players of team A show as that it is the music of gothic game that make it scary, i.e., the different kinds of sound in the game, the sound of the footsteps, the sound when the ghost appears. Therefore, all these kinds of sound or music make them immersed in the game.

Feedback of team "B"

The players of Team "B" who were playing "First person shooter game", i.e.,Cyrius with Background music said that they really enjoyed the game and they got so much connected with the game that they actually started feeling that they are on one of the mission in the war field where they are surrounded with different kinds of sounds i.e. the sound of the bullets , sounds of the different engines , sound of the tankers and the sound of the blast. Contrary to this the players who played the same   Video Game without music felt no connection with game as one of the player said "I don't felt like that I am on the mission because all I know that I am killing that opponent with the gun in my hand but still I don't get that fell of shooting a person as I can't heard the voice of bullet or any kind of bombarding which was going around me , for me, it was just an hide and seek game ." This response of the players of team shows that it is the music which helps the players to get immersed in the video game.

Find the Number Task

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Language in India www.languageinindia.com**ISSN 1930-2940** **18:5 May 2018**
Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   304

In this task, only a few players were able to clear round 1st of the game and the players who were able to clear that round were those who played the game without music. So, this result demonstrated the significant effect of background music in video games. It shows that "if a person is highly immersed in something it is highly difficult for him to switch within in a few seconds. As a result, their performance in the task will be impaired."[1] Then we discovered that players' engrossment intensity in game was notably converse ratio to their performance after that.

Conclusion

"Immersion in video games in this sense is the psychological experience of being involved in a game thanks to the opportunities it offers, and we can also say that somehow, somewhere it is the immersion which leads his success in the game and for the good experience of the player" (Zhang and Fu, 2015, p.4-7). "Music not only provides an audio complement to action on the screen but also help create a sense of a real physical space" (Morris, 2002). Moreover, the results also supported our hypothesis that music performs a significant function in video game and this is the music which helps us to get immersed in the video games. The result that we get from the experiment performed in the networking centre also shows that background music plays an essential role in the immersion and it also shows that it is not video games rather it is the music of the video game which lures, and which attracts the players towards it.

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Appendix
Psychological Inquiry into the Role of Music in video games questionnaire

Do not open this survey until you read all the instructions carefully.

INSTRUCTIONS:

- The survey is related to find out the function of music in Video Games. When we mentioned about Video Games, we mean any video game that you play on computer or on Xbox or in play stations or on hand-held game devices or on Arcades.

- It is mandatory to answer every question.

- In majority of questions, you just need to choose one option whichever you think is the right answer according to you. It's essential that participant give honest answers to the questions.

- All the information given by you will be treated confidentially.

Name:

Age:

Gender: Female ☐   **Male** ☐

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Language in India www.languageinindia.com**ISSN 1930-2940 18:5 May 2018**
Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   305

Education completed
☐ You are less than high school graduate
☐ You have completed High school
☐ You have completed Bachelor's degree
☐ You have completed Master's Degree

Section 1

Do you play video games?
☐ Usually
☐ Seldom
☐ Never

How often you play video games?
☐ Everyday
☐ Several times of a week
☐ Several times of a Month

How many days of the week you play video games?
☐ Everyday
☐ 2-3 days
☐ Never

How many hours of the day you play video games?
☐ 2-3hours
☐ 4-8hours
☐ 8-12hours

How do you prefer to play video games?
☐ Play station
☐ Xbox
☐ Both

Which genre of the game do you play the most?
☐ Gothic
☐ Fighting
☐ First person shooter

Section 2

	Questions on video games	Agree	Strongly Agree	Neutral	Disagree	Strongly

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Language in India www.languageinindia.com**ISSN 1930-2940 18:5 May 2018**
Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   306

						Disagree
1	You feel comfortable with video games					
2	Video games take the player to another world.					
3	Video games suits to any player of any age.					
4	You feel playing video games is the waste of time.					
5	You find video games as confusing thing					
6	Video game takes the player away from the real world.					
7	Video games suits to any player of any age.					
8	You feel playing video games is the waste of time.					
9	You find video games as confusing thing					
10	Video game takes the player away from the real world.					
11	Video game plays an important role in present world.					
12	Playing video games is very boring.					
13	Life will be harder without video games.					
14	You feel confident while playing video games.					
15	You find it as a waste of time to read about video games.					
	Video Games are Dehumanizing.					
17	You enjoy playing video games.					
	Video Games make the people lazy.					

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Language in India www.languageinindia.com**ISSN 1930-2940 18:5 May 2018**
Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   307

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19	Video games make the people dumb.					
20	Video games are actually fun to use					
21	Video games help you to feel relax .					
22	Video games make you feel confident.					
23	You prefer video games over movies.					
24	You prefer video games when you want to relax.					
25	You prefer video games rather than playing with your friends.					
26	Video Games are lowering down the standard of people.					

Section 3

	Questions	Not at all	Quite a bit	A little	Very much	Agree
1	While playing video game you experienced the felling of proud.					
2	While playing video game you experienced the felling of Nervousness					
3	While playing video game you experienced the felling of guilt.					
4	While playing video game you experienced the felling of excitement.					
5	While playing video game you experienced the felling of determination.					
6	While playing video game you experienced the felling of irritation.					
7	While playing video games you get the feeling of power					

Section 4

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Language in India www.languageinindia.com**ISSN 1930-2940 18:5 May 2018**
Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   308

	Questions related to music	Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree
1	You prefer playing video game without music.					
2	You enjoy video game with the background music.					
3	You find music as an unwanted element in video games.					
4	Music makes video games it difficult to play.					
5	You prefer to play video games with the music.					
6	You prefer music of the game over its graphic.					
7	You will prefer playing the resident evil without music.					
8	You can enjoy the resident evil without music.					
9	You can enjoy first shooter game without music.					
10	Background Music attracts you more towards video games.					
11	You enjoy more when you play a video game with its background music on. Music plays an important role in video games.					
13	Music transports you to the virtual world.					
14	Music can affect the pace of the player.					
15	Music makes you an active participant of the game.					
16	Music helps you to engage more in the video games.					

17	Music acts as a catalyst for video games.					
18	Music is the stimulating agent of the video games.					
19	Music is the integral part of the video games.					

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Neha Bandral, Research Student & Dr. Ranbir Kaur
A Psychological Inquiry into the Role of Music in Video Games   310

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